

# Claims

- [c1] 1. An electronic grip frame for a paintball marker, comprising:  
a frame;  
a trigger movably connected to the frame; the trigger being movable between a resting position and a firing position; the trigger including an optical interface portion, which is movable with the trigger, and a finger contact side and a rear side opposite thereof;  
an optical sensor mounted onto the frame proximal to the optical interface portion of the trigger and being capable of sensing movement thereof;  
an electrical output connected to the optical sensor; the electrical output being capable of generating a first electrical signal indicative of the trigger at the resting position and a second electrical signal indicative of the trigger at the firing position.
- [c2] 2. The electronic grip frame of Claim 1, wherein the optical interface portion of the trigger is a prong emanating therefrom.
- [c3] 3. The electronic grip frame of Claim 2, wherein the prong emanates from the rear side of the trigger.

- [c4] 4. The electronic grip frame of Claim 2, wherein the optical sensor includes a light emitter and a light detector to detect light from the light emitter; the optical sensor being capable of sensing a break in passage of light between the light emitter and the light detector; the prong being movable between a position not between the light emitter and the light detector and a position between the light emitter and the light detector.
- [c5] 5. The electronic grip frame of Claim 1, further comprising:  
a first adjustable stop connected to the trigger to limit positioning of the trigger relative to the frame when the trigger is in the resting position.
- [c6] 6. The electronic grip frame of Claim 1, further comprising:  
a second adjustable stop connected to the trigger to limit positioning of the trigger relative to the frame when the trigger is in the firing position.
- [c7] 7. The electronic grip frame of Claim 1, further comprising:  
means for biasing the trigger into the resting position.
- [c8] 8. The electronic grip frame of Claim 7, wherein the means for biasing is a ferrous set screw mounted in the

trigger and a magnet attached to the frame at a location aligned with the ferrous set screw.

- [c9] 9. The electronic grip frame of Claim 1, wherein the frame and trigger are made of metal.
- [c10] 10. The electronic grip frame of Claim 1, wherein the frame and the trigger are made of plastic.
- [c11] 11. The electronic grip frame of Claim 1, wherein the trigger is pivotally connected to the frame.
- [c12] 12. An electronic grip frame for a paintball marker, comprising:
  - a frame;
  - a trigger movably connected to the frame; the trigger being movable between a resting position and a firing position; the trigger including a non-contact interface portion, which is movable with the trigger, and a finger contact side and a rear side opposite thereof;
  - a non-contact sensor mounted onto the frame proximal to the non-contact interface portion of the trigger and being capable of sensing movement thereof;
  - an electrical output connected to the non-contact sensor; the electrical output being capable of generating a first electrical signal indicative of the trigger at the resting position and a second electrical signal indicative of

the trigger at the firing position.

[c13] 13. The electronic grip frame of Claim 12, wherein the non-contact sensor is an optical sensor.

[c14] 14. The electronic grip frame of Claim 13, wherein the non-contact interface portion of the trigger is a prong emanating therefrom.

[c15] 15. The electronic grip frame of Claim 14, wherein the prong emanates from the rear side of the trigger.

[c16] 16. The electronic grip frame of Claim 14, wherein the optical sensor includes a light emitter and a light detector to detect light from the light emitter; the optical sensor being capable of sensing a break in passage of light between the light emitter and the light detector; the prong being movable between a position not between the light emitter and the light detector and a position between the light emitter and the light detector.

[c17] 17. The electronic grip frame of Claim 12, further comprising:  
a first adjustable stop connected to the trigger to limit positioning of the trigger relative to the frame when the trigger is in the resting position.

[c18] 18. The electronic grip frame of Claim 12, further com-

prising:

a second adjustable stop connected to the trigger to limit positioning of the trigger relative to the frame when the trigger is in the firing position.

[c19] 19. The electronic grip frame of Claim 12, further comprising:

means for biasing the trigger into the resting position.

[c20] 20. The electronic grip frame of Claim 18, wherein the means for biasing is a ferrous set screw mounted in the trigger and a magnet attached to the frame at a location aligned with the ferrous set screw.

[c21] 21. The electronic grip frame of Claim 12, wherein the frame and trigger are made of metal.

[c22] 22. The electronic grip frame of Claim 12, wherein the frame and the trigger are made of plastic.

[c23] 23. The electronic grip frame of Claim 12, wherein the trigger is pivotally connected to the frame.

[c24] 24. The electronic grip frame of Claim 12, further comprising:

a microprocessor electrically connected to the electrical output of the non-contact sensor;

a sear solenoid electrically connected to the micropro-

cessor;

a hammer mechanically connected to the sear solenoid;

a pin valve mechanically connected to the hammer; and

a source of gas fluidly connected to the pin valve.

- [c25] 25. A method of firing a paintball marker, comprising the steps of:
- providing a frame;
  - providing a movable trigger to the frame with the trigger being movable between a resting position and a firing position;
  - providing a non-contact interface portion on the trigger;
  - providing a non-contact sensor mounted onto the frame proximal to the non-contact interface portion of the trigger and being capable of sensing movement thereof;
  - providing an electrical output connected to the non-contact sensor; the electrical output being capable of generating a first electrical signal indicative of the trigger at the resting position and a second electrical signal indicative of the trigger at the firing position;
  - depressing the trigger;
  - sensing movement of the trigger to a firing position; and
  - sending the second electrical signal indicating that the trigger is present in the firing position.

- [c26] 26. The method of Claim 25, wherein the non-contact sensor is an optical sensor.

- [c27] 27. The method of Claim 26, wherein the non-contact interface portion of the trigger is a prong emanating therefrom.
- [c28] 28. The method of Claim 27, wherein the prong emanates from the rear side of the trigger.
- [c29] 29. The method of Claim 27, wherein the step of sensing includes moving the prong in front of the optical sensor.
- [c30] 30. The method of Claim 25, wherein the frame and trigger are made of metal.
- [c31] 31. The method of Claim 25, wherein the frame and the trigger are made of plastic.
- [c32] 32. The method of Claim 25, wherein the trigger is pivotally connected to the frame.
- [c33] 33. The method of Claim 25, further comprising the steps of:  
providing a microprocessor electrically connected to the electrical output of the non-contact sensor;  
providing a sear solenoid electrically connected to the microprocessor;  
providing a hammer mechanically connected to the sear solenoid;  
providing a pin valve, with a pin, mechanically connected

to the hammer;  
providing a source of gas fluidly connected to the pin valve;  
providing a breech connected to the frame;  
providing a paintball in the breech;  
sending the electrical output of the non-contact sensor to the microprocessor;  
initiating a firing cycle;  
energizing the sear solenoid for a predetermined amount of time;  
releasing the hammer;  
impacting the hammer into the pin of the pin valve;  
releasing the gas through the pin valve into the breech;  
and  
propelling the paintball.